

SAMPLE LESSON PLAN #3 (GRADES K-6)

MAKE YOUR OWN RECYCLED PAPER

METHOD:

By making their own recycled paper, students will discover how a paper mill recycles used paper to make new paper. They will also learn that paper is one of many products that is manufactured from renewable forest resources.

MATERIALS:

- Scrap paper (notebook paper, copy paper, or used paper bags work well; avoid glossy finishes or paper with ink, like newsprint)
- Wooden frames approximately 5" x 7" or 8" x 10" in measurement
- Nylon or wire screen and stapler
- Plastic basin at least 2.5 gallons in capacity that is larger than the frame
- Newspaper for blotting
- Blender, sponge and strainer
- Towels for cleaning up water
- (Optional: colored paper, dried flowers, and herbs)

TIME:

Preparation: 30 minutes

Activity: Two 50-minute periods (the paper you make will need to dry overnight.)

Project Learning Tree, a program of the American Forest Foundation, offers classroom activities for grades K-12 that increase students' understanding of the environment, stimulate critical and creative thinking and develop students' ability to make responsible decisions on behalf of the environment.

For more information about this lesson and Project Learning Tree, please contact:
Project Learning Tree
California Department of Forestry
and Fire Protection
P.O. Box 944246
Sacramento, CA 94244
(916) 653-7958

BACKGROUND

Paper is a mat held together by a fiber's roughness and can be made from recycled paper, cotton, flax or wood. Paper comes from trees, which are a renewable resource. Most of the trees used for paper are planted and harvested for that purpose. More than half of the fiber used for paper comes from paper which has been collected for recycling and from residues left when lumber and other wood products are made. Recycling paper is easy and can help extend the value and utility of resources. However, no matter how much paper we recycle, new trees will still be needed for paper products because paper cannot be recycled indefinitely. Each time paper goes through the manufacturing process, the fibers deteriorate. After repeated recycling (about four to six times), the fiber is no longer suitable for papermaking.

LESSON

PREPARATION

The papermaking process is a wet one, so plan to use a work space that won't be harmed by moisture and have students wear aprons, smocks or old clothing. Gather the materials indicated. Tightly staple or tack nylon or wire screening to the wooden frame, making a "deckle," which is the surface on which you will layer the pulp.

PROCEDURE

- Introduce the activity by discussing each phase of the recycling loop: collecting, processing and purchasing. Ask students if they know what happens to paper that is collected for recycling. Explain that during this activity, they will discover how a paper mill recycles used paper to make new paper.
- Remove any plastic or staples from the scrap paper and have students tear it into small pieces (approximately 1-inch squares). Fill the blender halfway with warm water, then add a handful of the small pieces of paper. Blend at medium speed until you no longer see pieces of paper, and the pulp has a soupy

consistency. You can blend in a piece of construction paper for color.

- Fill the large basin half way with warm water. Pour the pulp mixture into the large basin. Mix the pulp and water thoroughly.
- Slide the deckle into the basin. Holding the deckle under the water, gently move it back and forth to get an even layer of pulp on the screen.
- Lift the deckle out of the mixture, keeping it flat. Allow it to drip until most of the water has drained off. You should have a uniform layer of pulp mixture on the screen. (At this point, students can place dried flowers or herbs on the pulp.) Press the pulp gently with your hand to squeeze out excess moisture. Soak up any excess water dripping beneath the deckle with a sponge.
- Place newspaper on a flat surface and turn the screen paper-side-down on it. Lift the screen gently, leaving the paper.
- Cover the paper with another layer of newspaper and blot. Remove the top layer of newspaper, and let the paper dry overnight. Gently peel off the paper.

STANDARDS

Correlations to California's Content Standards, Grades K-12

ENGLISH—LANGUAGE ARTS

GRADE 4

Listening and Speaking: Students listen critically and respond appropriately to oral communications. 1.1, 1.6, 1.7

GRADE 5

Listening and Speaking: Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. 1.2, 1.3, 2.2

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Activity Guide. The complete Activity Guide and High
School Modules can be obtained by attending a PLT
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Tree Web site at www.plt.org.

SCIENCE

GRADE 4

Investigation and Experimentation:

Scientific progress is made by asking meaningful questions and conducting careful investigations. 6b

GRADE 5

Earth Sciences: Water on Earth moves between the oceans and land through the process of evaporation and condensation. 3d

GRADE 6

Focus on Earth Science: Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation. 6b, 6c

H. When you're finished making paper, collect the leftover pulp in a strainer and throw it out, or freeze it for future use. Don't pour the pulp down the drain!

I. To conclude the activity, discuss these questions: How is the new paper different from the old paper that you recycled? Why do you think recycling paper is important? How can you use your new paper?

ASSESSMENT OPPORTUNITIES

1. Ask younger students to explain how they made recycled paper. Have students put their new paper to use (greeting card, bookmark, etc.).
2. Ask older students to guide younger students in a papermaking activity, such as making a mural or poster on recycling and papermaking.